The Veterinary Record

FOUNDED BY WILLIAM HUNTING, F.R.C.V.S., 1888.

No. 51. DECEMBER 20, 1941. VOL. 53.

TUBERCULOUS ENTERITIS AND GASTRITIS IN BOVINES

W. M. McKAY, PH.D., M.R.C.V.S.,

FORGUE, ABERDEENSHIRE

Tuberculosis of the alimentary tract in bovines, as in humans, is a not infrequent manifestation of an extension of tuberculous infection.

Primary intestinal lesions are apparently very rarely met with, and since tuberculous ulceration is a manifestation of reinfection, this phenomenon is to be expected.

The writer, in experimental work with pigs, where doses of 1 mg. of pure culture were given by mouth to 16 pigs, on *post-mortem* examination failed to find any macroscopic lesions in the alimentary tract, although all showed lesions in the mesenteric glands. It is conceivable, however, that a massive infection by ingestion might result in ulceration of the intestinal mucous membrane.

In those few cases of calves brought to autopsy, which have suckled cows with tuberculous mastitis, no case of primary infection of the bowel has been met by the writer, but extensive infection of the mesenteric glands has been the invariable rule. One case, however, of congenital tuberculosis in a two-months-old calf was found to show ulceration of the intestine.

Secondary tuberculous enteritis, on the other hand, is a frequent manifestation of a reinfection from pulmonary disease.

In its second interim report (1907) the Royal Commission on Human and Animal Tuberculosis reported the results of observations on calves sucking cows which had tuberculosis of the udder. The calves were kept alive for periods ranging between 74 and 363 days and *post-mortem* examination showed tuberculosis localised to the intestinal tract in nearly every case, with lesions in the intestinal walls in all of them.

BALDWIN *et al.* (1927) stated that about 90 per cent. of patients with cavity in the lung showed some evidence of secondary tuberculous involvement of the intestine. They stated that the usual method of infection of the alimentary canal is by way of its lumen and that, other things being equal, the severity of this infection is proportionate to the amount of sputum swallowed. The same authors consider that a haematogenous infection of the intestine is rare. In the present series of 21 cases of enteritis, no fewer than 12, or almost 60 per cent., showed evidence of a contemporary acute generalised blood stream infection; two, or 10 per cent., showed evidence of chronic haematogenous infection.

The lesions of tuberculous enteritis can occur anywhere along the length of the intestinal tract. In the writer's experience the commonest site appears to be in the small intestine, but caecal lesions are also common. The lesions themselves take the form of yellow tubercles or, more commonly, irregular ulceration extending deeply into the bowel wall. These ulcerations vary in shape and size and may be elongated erosions or simple craters, with raised edges. They may be few in number, or they may be of a very extensive character involving almost all the bowel wall throughout its length. While tuberculous enteritis, therefore, is a relatively common *post-mortem* finding, tuberculous lesions in the stomach, on the other hand, are rare.

CALMETTE (1923) considers that tuberculous disease of the stomach (of bovines as well as of man) is a pathological curiosity. BALDWIN *et al.* (1927) state that tuberculosis of the stomach is extremely rare. One such case has been met with by the present writer and will be described later in this paper.

Of 100 consecutive cases of bovine tuberculosis autopsied by me, the glands of the alimentary tract were affected with caseous or calcareous lesions in 72 animals. Tuberculous enteritis was found to be present in 21; of these, three animals did not show lesions in the mesenteric glands; all, however, showed pulmonary lesions. One congenital case showed small caseous tubercles in the bowel wall as well as ulceration, one eight-year-old cow showed small caseous lesions in the bowel wall, together with ulceration of the bowel mucosa, while another cow showed gross lesions in the mesenteric glands with healed ulcerations extensively distributed throughout the length of the small intestine.

Case I. Tuberculous ulceration of the stomach.

HISTORY. The animal, an eight-year-old dry cow, had been in good condition until about two months before being clinically examined. During these two months there had been a gradual loss of weight, the coat had become dry and the hair harsh and unthrifty in appearance. During the last two weeks of life a cough had become evident; occasional fits of coughing may have occurred before this, but had not been noted as of any consequence. Some diarrhoea occurred intermittently and appetite was latterly diminished.

Auscultation of the chest revealed evidence of pulmonary disease.

The left anterior quarter of the udder was found on palpation to be indurated.

Autopsy. *Post-mortem* examination showed the animal to be suffering from acute miliary tuberculosis.

The lesions found were as follows: Well-defined small caseous lesions in the left anterior quarter of udder involving the tissues adjacent to the lactiferous sinus. The supramammary lymph gland was enlarged and indurated.

Abdomen.—There was generalised miliary peritonitis. The capsule of the spleen was covered with miliary and numerous large sessile lesions. The capsule of the liver showed similar lesions with infrequent small caseous areas scattered throughout its substance. The portal and hepatic glands showed extensive areas of caseation.

Both kidneys were affected with large cortical lesions at their anterior poles.

The duodenum, jejunum and ileum were grossly affected with deep ulceration throughout their entire lengths; the caecum and colon were similarly affected and the lining of the true stomach, the abomasum, showed three small irregular ulcerations of about 1 cm. in diameter and appeared less deep than those in the intestine. All three were situated near the junction of the abomasum and the duodenum.

The mesenteric and gastric lymph glands were grossly enlarged to the size of oranges and extensively caseated.

Thorax.—The thorax showed generalised pleurisy with early "grape" lesions, miliary lesions in both lungs with a number of small caseous lesions scattered throughout their substance, but without cavity formation. The bronchial, mediastinal and retropharyngeal lymph glands were extensively caseated and two large ulcers with caseous centres were found in the trachea.

Case II. Primary (congenital) tuberculous enteritis.

History. The subject was a two-months-old bull calf, born with opacity of the cornea, which produced total blindness. Apart from this the animal was at first apparently normal and feeding well. About two weeks before clinical examination the calf developed symptoms of mental derangement and appeared "stupid" to the owner. Appetite was maintained, but the calf did not thrive and began to lose condition.

Clinical examination showed the animal to be in poor condition with gross tuberculosis of both eyes; the corneas were opalescent with a pink background and with marked glaucoma.

No cough had been noted, but ausculation of the chest revealed rhonchi, the prescapular and precrural lymph glands were enlarged, indurated and readily palpable.

Autopsy. *Post-mortem* examination of this calf proved to be very interesting.

The whole lymphatic glandular system was extensively affected. Every gland was much enlarged and all were caseous.

Abdomen.—There was acute diffuse peritonitis; calcareous congenital lesions were present in the substance of spleen and liver. Miliary lesions were found in the cortex of both kidneys. The adrenal glands were deeply congested and indurated. Peyer's patches showed small shot-like yellow tubercles and the mucosa showed crater ulceration.

Thorax.—The pleura showed sparse caseous areas. Grape lesions were present on the pericardium, with some fluid in the sac. The myocardium was extensively affected with discrete caseous lesions, involving the tricuspid valve of the right ventricle. The majority of the lesions, however, were in the left ventricle. The lungs showed sparse caseous lesions scattered throughout their substance.

Head.—The eyes were grossly affected, the tuberculous infection apparently involving their entire structures. Sections are being prepared for a detailed examination; the lesions therefore cannot be properly described here.

The brain and meninges were similarly extensively affected with caseous and miliary lesions respectively. Pea-sized caseous tuberculomas were found in the medulla: these were readily shelled out; multiple pedunculated encapsulated caseous tuberculomata "hung" from the cerebrum. Small pea-sized encapsulated lesions were found in the right cerebral cortex; similar sparse lesions existed in the white matter in the left cerebral cortex: these were irregular in shape and about the size of haricot beans. The meninges were affected with widespread miliary lesions.

Accessory Glands.—The right testicle showed a small fibrous area.

As already stated, all the lymphatic glands of the limbs, head, thorax and abdomen were enlarged and caseous.

Case III. Healed extensive tuberculous enteritis.

History. The subject was an eight-year-old cow, which had been in failing health for about three months. Appetite had been good until during the last few days of life.

Ten days before death a cough had become noticeable and condition was rapidly lost thereafter. Three days before death the cow suddenly became decumbent and gradually comatose.

Autopsy. No macroscopic lesions were detected in the udder.

Abdomen.—Grey fibrinous peritonitis with considerable ascites.

The entire mesenteric chain was enlarged and grossly caseous. Small caseous areas were present in the hepatic gland; old capsular lesions on the liver. There were acute areas on the spleen capsule.

The gastric lymphatic glands, especially the glands of the reticulum, were very prominent and calcareous.

The lining of the small intestine showed the clear outlines of elongated ulcerations varying in shape and size from that of a pea to approximately 1 inch. These depressed outlines involved the small bowel in its entire length and appeared like the healed skin lesions of smallpox.

The extent and severity of this earlier reinfection gave rise to surprise that the animal should have suffered so severely and yet had been able to recover.

Thorax.—There were multiple caseous lesions on the pleura; the lungs were affected with miliary tubercles and also with sparse caseous lesions. The bronchial and mediastinal glands showed areas of caseation up to the size of an egg. Ulceration with caseation was present in the trachea.

The right supramammary gland showed small caseous areas.

SUMMARY

The incidence of tuberculous enteritis in 100 consecutive cases of bovine tuberculosis is discussed.

One case of tuberculous ulceration of the stomach is described.

Details of a case of congenital tuberculous ulceration of the small intestine are given.

A case of miliary tuberculosis showing vestigial ulceration of the small intestine is described.

Conclusions

The faeces from tuberculous animals must be regarded with considerable suspicion since such a high proportion of affected animals show disease of the intestinal tract. Taken together with those animals suffering from tuberculosis of the lungs, and which will be swallowing quantities of sputum and the faeces of which will consequently be heavily infected, it can be assumed for practical purposes that the faeces constitute one of the greatest, if not the greatest, means of spreading infection in housed animals. The risk in grazing animals seems to be slight according to the findings of Maddock (1936). This worker grazed calves on faeces-infected pasture, under controlled conditions, and subsequently failed to find any evidence of tuberculosis on *post-mortem* examination. This same worker (1933) showed that under average conditions the bacillus of bovine tuberculosis will survive on pasture for six months.

References

BALDWIN, PETROFF and GARDNER. (1927.) *Tuberculosis, Bacteriology, Pathology and Laboratory Diagnosis.*

CALMETTE, A. (1923.) *Tubercle Bacillus Infection and Tuberculosis in Man and Animals.*

MADDOCK, E. C. G. (1936.) *J. Hyg. Camb.* **36.** 594.

———. (1933.) *Ibid.* **33.** 103-117.

Royal Commission on Human and Animal Tuberculosis. (1907.) Second Interim Report. Part I.

THE TIME OF OVULATION IN THE BITCH

L. F. Whitney (*Vet. med.* **35**, 182-187; Abst. *Vet. Bull.* xi. 649) reports an extensive clinical study, extending over at least 14 years, of reproductive behaviour in the bitch. Animals of many different breeds were employed, but environmental and nutritional conditions remained as little changed as possible. The paper records data obtained during the years 1931-38, and is based on 90 selected oestral periods.

A careful technique was employed in order to determine the days upon which a bitch would accept the male. The acceptance period varied in individual cases from 6 to 16 days (with a mean of 11 days). Actual coitus was permitted on certain days only, and from the fertility or otherwise of such matings it is concluded that the optimum time for mating is after the third day of acceptance, or even later in individual cases.

Whitney's statements regarding the time of ovulation are based mainly on his assumption that the duration of pregnancy in the bitch approximates very closely to 61 days in most cases, and not upon anatomical evidence. He believes that ovulation usually occurs at or about the fifth day of acceptance, but varies in different bitches, that ova may be fertilised several days after ovulation, and that coitus does not accelerate the shedding of ova.

* * * * *

Weekly Wisdom

What we have to build up as the foundation of the new world economy is the doctrine of the duties of nations in a co-operative interdependence. To transform a bond of force into a bond of consent is always progress towards that goal; to dissolve the bond altogether is retrogression.—THE TIMES, September 19th, 1941.

CLINICAL COMMUNICATIONS

Acute Hypocalcaemia in the Mare

T. A. JACKSON, M.R.C.V.S.,

TREGONEY, TRURO, CORNWALL

It is only after due deliberation on my comparatively short experience that I venture to submit this article, in the hope that the facts therein may be of interest to my fellow-members.

Subject.—Six-year-old, dark bay, light draught mare.

History.—This mare was recently purchased with well-developed *six* weeks old colt at foot. She was well known to the new owner before purchase, and had enjoyed good health until June 6th.

Symptoms.—Seen that evening, the mare was found to be in great distress. A facial swelling was due to distension of the cheeks by unswallowed grass. Respiration was laboured and stertorous, perspiration was profuse, the pulse rate approximated 100, and the temperature was 102·5° F. The mare had difficulty in maintaining her equilibrium. Her nostrils were very distended; the eyes were half shut, the legs outspread, and tail and head were elevated, while from time to time clonic spasms, which persisted for several seconds, were observed. At no time, however, did the mare go down.

Diagnosis.—A tentative diagnosis of eclampsia was made.

Treatment.—A heavy dose of morphia (grs. viii) was given subcutaneously. The mare was made as comfortable as possible and left for the night. Examined eight hours later, she was obviously much worse. Exhaustion was extreme though the spasms had lessened in intensity: the breathing was remarkably loud and laboured, the pulse was slow and feeble and the patient was bathed in a profuse, soapy sweat.

It was then decided to try calcium therapy and, accordingly, calcium borogluconate (R Calcium gluconate oz. iii; Acid boric dr. ivss., Aquae dest., oz. xii) was administered intravenously. The effect was instantaneous: within ten minutes all the exaggerated symptoms already described had completely disappeared. The mare began eating hay and calling to her foal. The owner was advised against allowing the foal to suck and advice was given as to the treatment of the mare's udder and feeding of the foal for the next 24 hours.

Course.—On June 8th it seemed as if recovery was to be maintained. The foal was still withheld but the mare was allowed to graze for a few hours. Instructions were again given regarding the mare's udder. On June 9th calcium borogluconate, in similar dosage, was given subcutaneously. The foal was then allowed to run with the dam. Recovery proved uneventful. No relapse occurred and at the time of writing the mare is still enjoying the best of health.

Discussion.—Points of interest are: (*a*) The comparatively long period elapsing between parturition and onset of symptoms; (*b*) tolerance of large dose of morphia without obvious effect; and (*c*) the spectacular effect of the intravenous injection of calcium borogluconate.

Congenital Diaphragmatic Hernia in a Cat

H. LALL, B.Sc., M.R.C.V.S.,
Research Institute of Animal Pathology, Cambridge

Subject.—A cross-bred neuter male cat, five years old.

Symptoms and History.—The animal was brought for inspection because it was losing condition and it coughed when made to exercise. The appetite was abnormal. On examination the cat was found to be very dull and sluggish. Its hair came off easily and in large masses. Heart sounds were inaudible on the left side. Respiratory sounds were absent over the posterior part of the left chest. On palpation of the abdomen one could feel a lump the size of an egg and one or two smaller ones; otherwise the abdomen appeared to be empty.

Diagnosis.—The abdominal lump was probably a neoplasm with secondary lesions in the chest. The animal was destroyed.

Post-mortem Examination.—This was negative as regards neoplasm. Both kidneys were enlarged and the peritoneal mesentery of the left one was larger than usual. There was a hole in the diaphragm in the part which normally is the tendinous centre. The following organs were in the thoracic cavity: three lobes of the liver, including the gall bladder; the spleen (in the left side of the thorax); about half of the pancreas; the gastro-splenic omentum; part of the great omentum.

The great omentum and the liver partially plugged the hole in the diaphragm and so separated the thoracic and abdominal cavities. The heart, which lay in the right half of the chest, was small when compared with that of a cat of similar size, while the intestines were 3 feet shorter. From the character of the hole in the diaphragm, I concluded that these abnormalities were congenital in origin. In the literature at my disposal I have not come across a record of any similar case.

PIGS AND POULTRY RATIONS

The Ministry of Agriculture announces that it has been decided to increase the proportion of protein in the basic rations granted for pigs and poultry from one-tenth to one-eighth of the total quantity allowed. The objects of this increase are (*a*) to provide additional protein for pig and poultry farmers, most of whom are now using waste materials deficient in protein to supplement their rations, and (*b*) in the case of commercial poultry keepers, to supply protein for the chick-rearing ration, since the monthly allocations under the scheme are not large enough to allow of a proportion being given in the form of high protein food. The proportions of protein and cereal coupons which must be deposited to obtain compounds remain unchanged.

* * * * *

Because of the continuing expansion of the work of the British Standards Institution and the development of its relations with the Government departments and with standardising authorities overseas, the General Council has appointed an Executive Committee under a permanent Chairman. Mr. C. le Maistre, C.B.E., for the past 25 years chief executive officer, has been appointed full-time Chairman of the Executive Committee, and Mr. P. Good, C.B.E., for several years deputy-director and recently joint-director, has been appointed Director and Secretary of the Institution.

ANNOTATION

Pulmonary versus Alimentary Infection in Tuberculosis

The problem of the mode of natural transmission in bovine tuberculosis has provoked the interest of research workers and clinicians for the past 70 years, but it is probably fair to assert that no definite conclusions have yet been reached. It is not surprising, therefore, that attention is again actively focused on the controversy concerning the relative importance of the alimentary and respiratory tracts respectively as portals of entry for the tubercle bacillus. The theory that pulmonary tuberculosis was of intestinal origin was advanced by von Behring in 1903: it was at variance with opinions which were widely held at that period, *viz.*, that primary tuberculosis of the lungs of cattle was largely attributable to the aspiration of infected material and in particular to dried sputum discharged by animals with open lesions. Von Behring contended that the tubercle bacillus could pass through the intestinal wall and localise in the pulmonary tissues without leaving any trace of its path through the abdominal cavity. His hypothesis was later supported by Calmette and Guèrin but was strongly contested by M'Fadyean and many other European workers of repute.

Recently Edwards (1937) has studied the rôle of alimentary infection in the calf by deliberately feeding young tubercle-free animals on milk naturally infected with *Mycobact. tuberculosis*. He states that over a period of 12 weeks, 36 calves received raw milk fed from buckets fitted at the base with rubber teats. At the conclusion of the experiment, 24 of these animals reacted to a double intradermal tuberculin test and, with one exception, all showed the presence of tuberculous lesions. It was anticipated that evidence of primary infection would be found in the digestive tract or its associated glands; nevertheless, a careful naked-eye examination of the mesenteric glands failed to show the presence of visible lesions whereas tubercle foci were found in the thoracic glands and occasionally in the lungs of every calf which was affected. It is stated that the lesions in the thoracic cavity were in such an advanced stage that had tubercles been present in other sites they should have been readily detected in a proportion of the affected cases: moreover, the method of feeding the calves was such that direct respiratory infection by aspiration was unlikely to have occurred.

Further information on the subject is furnished in an article by White and Minett (1941), an abstract of which appears in the current issue. In brief, attempts were made to infect calves and follow the course of the disease by (*a*) the feeding of known tuberculous milk by bucket or stomach tube, (*b*) the introduction of cultures enclosed in capsules into the lumen of the intestine by laparotomy, and (*c*) the oral administration of decreasing doses of tubercle bacilli added to milk and fed by bucket.

With regard to this series of experiments, the conclusion is reached that when young calves are given contaminated milk by bucket the throat and lungs are most readily infected, and that the intestines and associated glands are affected only when large doses are given. Primary infection of the lungs is ascribed to aspiration which cannot be avoided by the use of

the stomach tube, the only effective method of limiting the disease to the intestine being the introduction of bacilli directly to its lumen.

There is a striking discrepancy between the results obtained by these groups of investigators. It does not necessarily follow, however, that two entirely different and irreconcilable theories are at stake and it would be most unwise to conclude that one line of argument is right and the other wrong. A moment's reflection will show that the course of the disease may depend to a great extent on the method of conducting the experiments, the number of organisms introduced, and so on. For example, the experiment of Edwards may be contrasted with those of Buxton, Glover and Griffith (1934), Buxton, Glover, Dalling and Bosworth (1939), in which calves infected by single or repeated large doses of virulent tubercle bacilli given orally in a very small bulk (1 c.c. to 2 c.c.) showed lesions of varying extent in the glands of the alimentary tract with occasional spread to other parts, including the lungs and the thoracic glands. The pulmonary lesions were invariably secondary to the mesenteric foci.

It may be noted that in these trials a very large number of organisms was given in a small menstruum at relatively widely-spaced intervals and it can be assumed that the glands of the alimentary tract were subjected to an overwhelming attack by a mass of bacilli which naturally produced visible caseous foci. This hypothesis is certainly supported to some extent by the results which White and Minett obtained by the introduction of capsules containing bacilli into the lumen of the gut, although their experiments suffered from the defect that in several instances local tuberculous granulomata were found at the operation site, indicating that some of the organisms had escaped into the peri-intestinal tissues. In the experiment conducted by Edwards, on the other hand, the number of organisms given was quite unknown, but it is not improbable that the glands were subjected to a constant but much smaller stimulus.

While it is admitted that our knowledge of the influence exerted by small doses of tubercle bacilli on groups of glands is meagre, a tenable theory is that a restricted number of organisms entering a lymphatic gland may produce minimal lesions which are not readily detected and act as inducers of a local immunity which protects the tissue from further invasion. This theory seems to receive some confirmation by experiments on vaccination with B C G (Watson, 1930, 1934; Buxton *et al.*). In several instances it has been found that protected animals which had been exposed to infection of long duration, showed no macroscopic foci in the glands of the alimentary tract, but guinea-pigs inoculated with suitable suspensions succumbed with lesions of tuberculosis.

White and Minett criticise the experiments of Edwards on the grounds that he did not appear to have considered seriously the possibility of primary lung infection by aspiration of infected milk during the process of bucket feeding, the milk being splashed round the pharynx and drawn into the respiratory tract. They attempted to overcome this difficulty by the use of a stomach tube, but they failed to avoid regurgitation in at least two of their animals. In these cases tuberculous lesions were found in the thoracic cavity, but no evidence of involvement of the mesenteric glands was discovered, from which it is deduced that a small dose of bacilli may produce aspiration tuberculosis while failing to cause intestinal lesions.

The difference in the susceptibility of the alimentary and respiratory tracts is brought out by experiments in animals which are fairly refractory to experimental infection, such as the dog. For example, Findel (1907) noted that dogs were much more readily infected by inhalation than by feeding, and stated that whereas by the former method less than 0·5 mg. produced widespread grey nodules in the lungs, as large a dose as 172 mg. failed to infect by the alimentary tract, observations which have been confirmed and extended by Mills, Barth and Gunn (1940). Experiments of the same type carried out in calves have led to similar conclusions, but it must not be assumed that they provide a complete negation of the alimentary theory of von Behring. The attitude of M'Fadyean to this controversy is particularly significant. Speaking about the theory of von Behring, he says: "The whole of the experimental evidence on which the theory of the intestinal origin of pulmonary tuberculosis in man was built up has been swept away, and valuable new support has been provided for the older inhalation theory; but one ought to avoid the mistake of denying any importance to infection by ingestion either in man or in cattle, or of asserting that tubercle bacilli which enter the body by way of the alimentary canal are never the cause of tuberculosis with lesions apparently primary in the lungs."

It would seem, too, that the issue may have been confused by a failure to realise that the aspiration of an infected fluid is probably quite different from a true inhalation pneumonia. It is worth while drawing attention to some experiments on guinea-pigs which were undertaken by Lurie (1930). This investigator found that normal animals confined with tuberculous cage-mates where the food was contaminated with excreta, developed intestinal tuberculosis in 29 per cent. of cases; the disease was essentially chronic in nature. If, on the other hand, the normal animals were exposed to infection in the same room but were not in the same cages, 14·5 per cent. acquired tuberculosis with marked involvement of the lungs often with cavity formation and massive tuberculosis of the tracheo-bronchial lymphatic glands. The experiments of Lurie have been taken a stage further by Wells. In the first place Wells and Wells (1936) have elaborated a theory that in air-borne infections, material expelled from the mouth and nose is composed of a heterogenous suspension of particles. Many of the elements are of a comparatively large size and quickly settle to the ground, whereas the smaller particles rapidly lose a large part of their surface liquid and are converted into "droplet nuclei" which are of very small dimension and travel over long distances in air currents. Applying this knowledge to tuberculosis, Wells and Lurie (1941) have completed some experiments in which rabbits have been exposed to controlled numbers of tubercle bacilli sprayed into the atmosphere in such a way that only the smallest droplets were carried towards the animals in the air stream. A cultural examination of the lungs shortly after exposure showed that the actual number of organisms reaching the alveolar tissues corresponded very closely with the estimated numbers, a correction having been made for the gaseous exchange. When 1,000 or more bacilli were inhaled, a fulminating type

of pulmonary disease was induced with innumerable primary caseo-pneumonic nodules; when the organisms inhaled were limited to 20 to 100, the disease was more protracted, but it is remarkable that the introduction of only 23 bacilli was capable of producing multiple pulmonary foci.

It is necessary, therefore, to draw a sharp distinction between a true air-borne disease in the sense indicated by Wells whereby fine particles are conveyed to the pulmonary tissues, and that derived from the coarse liquid droplets which, it is suggested, may be aspirated into the trachea from infected milk. The comparatively trivial nature of the lesions induced by the direct intratracheal injection of tubercle bacilli, previously reported by Brunzema and Kauffmann (1933) and others, has been confirmed by White and Minett since they found that in a calf receiving a dose of 0·01 mg. the only lesions at the 41st day, apart from a caseous focus at the site of injection, were caseation of the regional lymph glands and a small epithelioid cell collection, discovered by section, in a mediastinal gland. It is difficult to understand, therefore, how the fairly extensive pulmonary changes noted by Edwards could have been caused *in every case* by the aspiration of small amounts of infected milk.

There seems to be a clear indication for further studies of this problem in which particular attention might be paid to such factors as the size and nature of the menstruum in which tubercle bacilli are suspended, the significance of tonsillar infection followed by lymphatic spread and the susceptibility of the lungs to particles of varying size.

R. E. Glover.

References

Brunzema, D., and Kauffmann, F. (1933.) *Z. Hyg. InfektKr.* **115.** 370.

Buxton, J. B., Glover, R. E., and Griffith, A. S. (1934.) *Rept. Inst. Anim. Path. Camb.* **4.** 262.

——— ——— Dalling, T., and Bosworth, T. J. (1939.) *J. comp. Path.* **52.** 273.

Edwards, S. J. (1937.) *Ibid.* **50.** 377.

Findel. (1907.) *Z. Hyg.* **57.** 104.

Lurie, M. B. (1930.) *J. exp. Med.* **52.** 729.

Mills, M. A., Barth, E. E., and Gunn, F. D. (1940.). *Amer. Rev. Tuberc.* **42.** 28.

Watson, E. A. (1930.) *Proc. 11th Internat. vet. Cong.* **2.** 104.

———. (1934). *Proc. 12th Internat. vet. Cong.* **2.** 2.

Wells, W. F., and Lurie, M. B. (1941.) *Amer. J. Hyg.* **34.** Sect. B. 21.

——— and Wells, M. W. (1936.) *J. Amer. med. Ass.* **107.** 1698.

White, E. G., and Minett, F. C. (1941.) *Brit. J. Tuberc.* **35.** 69.

The Minister of War Transport calls the attention of all users of motor vehicles to the importance of taking the fullest possible precautions against freezing, and states that the small existing supplies of anti-freeze available for civilian road transport will be allocated by the Regional Transport Commissioners. Any operator of vehicles engaged on essential national work who is unable to protect his vehicles in any other way should apply to the appropriate Commissioner, giving full particulars of his demands. These arrangements apply to all goods, public service, and agricultural vehicles, and vehicles operated by public utility undertakings. No further supplies of anti-freeze will be available for vehicles used for private purposes.

ABSTRACTS

[THE PATHOGENESIS OF TUBERCULOSIS IN THE CALF. White, E. G., and Minett, F. C. (1941.) *Brit. J. Tuberc.* **35.** 69-87. (18 refs.).]

The authors state that the experiments described in this paper were designed to study the pathogenesis of tuberculosis in young calves infected with tubercle bacilli in varying doses and by different routes. Attempts were made to limit as far as possible the portal of entry of infection to one site and to study the development of lesions under more standardised conditions than appertains in feeding experiments. The experiments fall into two groups.

Group 1 comprised calves which were fed on milk slightly or heavily contaminated with tubercle bacilli, either by bucket or stomach tube, whereas those of Group 2 were either given cultures of bovine tubercle bacilli directly into the duodenum under general anaesthesia, fed by teat bucket or injected intratracheally.

Twenty-four calves were used in all. They were bull-calves received from a tuberculin-tested herd when five to seven days old.

For the first group of experiments eight calves were used. Four were fed with slightly contaminated milk, two from a bucket and two by stomach tube. The other four calves were fed similarly but with heavily contaminated milk. Of the four calves fed with slightly contaminated milk, two (calves 1 and 3) failed to develop tuberculosis but the other two (calves 2 and 4) revealed tuberculosis of the lungs with lesions in bronchial and mediastinal nodes. One of these (calf 2) had been fed from a bucket and the other (calf 4) by stomach tube. Infection is attributed to aspiration. Of the four calves fed on heavily contaminated milk three developed tuberculosis. One (calf 5) showed tuberculosis of the tonsil and intestine and related lymph nodes only; another (calf 6) showed tuberculosis of the lung, pharyngeal and bronchial nodes and the third calf (calf 8) revealed lesions in the lungs, bronchial, mediastinal and mesenteric nodes.

In their conclusions on this first group of experiments the authors state that owing to regurgitation those performed with the stomach tube were inconclusive. It is interesting to note, however, that both the calves which developed tuberculosis (two were negative) following stomach tube infection developed caseous broncho-pneumonia. Regarding the four calves fed from a bucket one was negative, the second had tuberculosis of lungs and related lymph nodes, the third had alimentary lesions and the fourth lung lesions and evidence of throat infection. [In the abstractor's opinion these results are also inconclusive.]

In the second group of experiments several calves were anaesthetised and a culture of tubercle bacilli enclosed in a capsule was inserted through an incision made in the wall of the abomasum and released in the duodenum. Despite the various precautions taken, some of the calves developed tuberculosis of the wall of the abomasum and neighbouring peritoneum. Apart from a preliminary experiment on two calves (9 and 10) which died as a result of anaesthesia, eight calves received cultures in this way. Two (calves 11 and 16) failed to develop gross tuberculous lesions and another (calf 13) died from acute streptococcal

infection 36 hours after operation. Of the five remaining calves, three (12, 14 and 18) developed tuberculosis of the abomasal wound. [This in the abstractor's view was a particularly unfortunate happening as one cannot exclude this fact from consideration in assessing the value of the experiment. It must be conceded that this lesion affords a means of spread which can hardly be regarded as one which might occur naturally following alimentary infection.] In one calf (14), apart from other lesions, miliary tuberculosis of the lungs developed. In calf 12, lesions were present in gastric, hepatic and two mesenteric nodes whereas in calf 18 the lesions were confined to the peritoneal cavity. The remaining calves (15 and 17) both developed naked-eye lesions in Peyer's patches and mesenteric nodes.

In view of the common use of the teat-bucket in commercial calf-rearing, three calves (19, 20 and 21) were fed on tuberculous milk by this method. Calf 19 developed lesions on Peyer's patches and the mesenteric nodes and ealf 20 revealed a minute caseous focus in one mesenteric node. Calf 21 showed caseation in the right bronchial node. [Apparently none of the three calves showed evidence of primary tuberculous pneumonia due to aspiration.—Abstractor.]

Three calves (22, 23 and 24) were inoculated intratracheally with culture, but although lesions were produced at the site of inoculation and in such lymph nodes as the cervical, bronchial, mediastinal and pharyngeal nodes, no evidence of tuberculous pneumonia is recorded.

The authors, in their conclusions, state: "When young calves are given contaminated milk by ordinary or teat bucket it would appear that the throat and lungs are most readily infected; the intestines and mesenteric nodes are involved only with large doses or not at all, due in part to the bactericidal effect of the stomach contents. Primary infection of the lungs in such calves is due to aspiration (of tuberculous milk) and this cannot be prevented by the use of a stomach tube because of the risk of regurgitation or rumination."

[The ease with which primary tuberculous broncho-pneumonia due to the aspiration of tuberculous milk is supposed to occur is not borne out by the fact that all three calves injected intratracheally failed to show lung lesions. Assuming aspiration of milk to occur, it is also surprising that non-tuberculous broncho-pneumonia is not more common in bucket-fed calves. The evidence regarding the aspiration of regurgitated milk is not forthcoming in this paper. —Abstractor.]

G. D.

* * * * *

[BEHRING AND THE POSITION AS REGARDS TUBERCULOSIS TO-DAY. Nieberle, K. (1941.) *Deuts. tierärtzl. Wschr.* **49**. 69-72.]

This is an address given at Marburg in memory of von Behring. Much of it is a summary of recent work on the pathogenesis of tuberculosis in animals. The application of Ostertag's method of control has failed to bring about any reduction in bovine tuberculosis in Germany. In fact, the incidence has risen considerably during recent years in spite of the widespread use of the tracheal swab for detecting pulmonary tuberculosis.

A recent survey showed that 31 per cent. of 412,000 cattle reacted to the tuberculin test. Of the 50,000 herds included in the survey only 1·12 per cent. of those of large size were free from reactors, whereas over 50 per cent. of the very small herds were free from the disease. The most important age at which infection of cattle occurs is from 6 to 18 months, and 90 per cent. of the cases arise by inhalation. Calf-hood infection affects only about 1 per cent. of calves and, in herds in which all milk is boiled before being fed, about 50 per cent. of cases arise from intra-uterine infection.

Reliance on the detection of "open" cases of tuberculosis, even using widespread laboratory facilities, cannot possibly reduce the incidence of bovine infection. The problem can be tackled only by tuberculin testing and the establishment of tuberculosis-free herds. In the case of large herds which are heavily infected it will be necessary to adopt Bang's method of separating reactors and non-reactors.

E. G. W.

* * * * *

[SALT IN THE TREATMENT OF ENTERITIS IN SWINE. (Editorial) *Vet. Med.* **36**. No. 10. (Oct., 1941.).]

The editor discusses various reports referring particularly to the treatment of paratyphoid and haemorrhagic dysentery by sodium chloride.

In acute enteritis there is a quick and marked dehydration, a toxic cell engorgement, circulatory stasis, increased permeability of capillaries, oedema of tissues, destruction of epithelial cells and passage of blood into the intestine. It is suggested that remedial action should be directed to (1) removal or neutralisation of the toxic accumulation in the digestive tract; (2) restoration of body fluid and salts.

Sodium bicarbonate is an excellent agent to accomplish the first purpose, and sodium chloride to bring about the second.

Amongst the factors causing digestive disturbances in swine the most common are found to be (1) improper food, and (2) improper administration of food, good or bad. The cause should be determined if possible and be removed or corrected before commencing the salt treatment. H. E. Pinkerton recommends the withholding of all food and water and giving 1 oz. of sodium bicarbonate for each pig in from ½ to 1 gallon of water and allowing no other drink from 10 to 12 hours.

The salt treatment consists of feeding with food soaked in salt solution. To induce the pigs to take the food they are starved for a few hours. Pinkerton soaks 3 bushels of oats in 15 gallons of water to which has been added 10 lb. of salt. Pigs recently weaned will eat this grain readily for 5 to 6 days, when their appetites begin to fail, probably indicating that their tolerance for sodium chloride has been reached.

Brown and Winch used oats soaked in a similar solution as a treatment for one lot of 80 small pigs affected with necrotic enteritis. The lot, which at first numbered 110 pigs, had been treated with alkaline solutions for 30 days without observable benefit but with a loss of 30. One course of treatment with the salted oats was followed by their complete recovery, saving 70 good pigs and 10 stunted by disease.

J. S. Koen, assigned to swine disease control for the B.A.I. in Western Iowa, states that 50 or more veterinarians have reported to him better results

(*Concluded at foot of col.* 1, *page* 750)

ROYAL COLLEGE OF VETERINARY SURGEONS

Membership Examinations (December, 1941)

LIST OF SUCCESSFUL CANDIDATES

Glasgow

1st Year:

Frew, Iain
Locke, Hugh
McDonald, A. W.
MacEwan, J. W. (B)
*Nimmo, I. S.
Raeside, Hugh
Thomson, Wm.

* Denotes 2nd class Honours.

(B) Denotes credit in Biology.

2nd Year:

Brownlie, J. F.
Conacher, F. I.
Doran, G. F. P.
Forsyth, Harry
Jarrett, T.
Johnston, J. B.
Macfarlane, I. M.
Moodie, Miss M. P.
Muir, T. H.
Roberton, D. P.
Stevenson, J. B.

3rd Year:

Boyd, J. A.
Brockhurst, F. B.
Clarke, A. A.
Corrie, J. W. (A)
Gibson, J. C.
Gillespie, A. E. (P)
McCallum, J.
MacFarlane, D. L.
McKim, I. M.
Morrison, J. G.
Pollock, J. C.
Smart, T. W. H.
Snowden, J. S. (A)
Tarver, W. J.
Thomas, E. V. (A)
White, J.

(P) Denotes credit in Pharmacology.

(A) Denotes credit in Anatomy.

4th Year:

Beatton, Miss M. C.
Bradley, J. F.
Douglas, J. C. (Path)
Evelyn, Miss A.
Fraser, John
Frith, H.
Grey, J. R.
Hendrie, E. W. (Paras)
Lennie, Miss B.
Lithgow, Thos.
Loughridge, S.
McLean, J. B.
Macleod, W. J.
McVinnie, A. J.
Matheson, A.
Nimmo, J. K.
Noble, W. A.
Peoples, J.
Steele, R. L.
Taylor, G. B. (Path)
Taylor, J. M.

(Paras) Denotes credit in Parasitology.

(Path) Denotes credit in Pathology.

(To be continued)

---

following the use of salt in swine enteritis than from any other treatment they have employed.

All reports indicate the need for swine under treatment to have access to all the fresh water they can drink.

The editor comments on the conflicting opinions as to the value of salt treatment, and stresses the need for controlled experimental treatment.

H. C. S.

IN PARLIAMENT

The following questions and answers were recorded in the House of Commons on December 11th:—

Hill Sheep Farming Committee, Scotland

Sir T. Moore asked the Secretary of State for Scotland whether he is aware that no veterinary expert on animal diseases has been included in the Hill Sheep Farming Committee; and whether, as one of the principal matters with which the Committee has to deal is that of health and disease in the sheep concerned, he can arrange to have this matter put right?

Mr. Johnston: As I explained on December 2nd in reply to the hon. and gallant Member for Argyll (Major McCallum) this Committee is intended to be not a body of experts but a body which will take take evidence from all interested parties, including no doubt the veterinary profession. One of its members is, however, a member of the Agricultural Research Council and Chairman of that Council's Sheep Diseases Committee.

. . . . .

Milk Adulteration (Penalties, Wales)

Mr. Pearson asked the Home Secretary whether he is aware that continued low penalties are inflicted by magistrates in Wales in cases of proved adding of water to milk; and will he take steps to ensure that penalties imposed by magistrates in these offences must be adequate to the crime perpetrated upon the public?

Mr. H. Morrison: While discretion must rest with the court to decide what is the appropriate penalty in each case, having regard to the particular facts and circumstances, I am in full accord with my hon. Friend that it is the first duty of the magistrate to enforce the law and to impose penalties which are adequate for this purpose. I hope, therefore, that this Question and reply may serve to remind any magistrates who may be inclined to undue lenience in cases of the kind mentioned that these evasions of the law are offences against the public who are entitled to look to the magistrates for protection.

DRUGS AND THE FAR EAST

Commenting on the above factor in the position created by Japan's unprovoked attack on American bases in the Pacific and on British possessions in the Far East, doubtless at Germany's instigation, which has made the war virtually world wide, *The Pharmaceutical Journal* states: "The rapacious swoop by Japan on the rich Eastern treasure house from which so many of our drugs are drawn will endanger supplies for many months and price advances must be anticipated. With some of these drugs import licences are already necessary, quotas have been instituted and Japanese credits frozen for some months. Consequently the commodities in question have been in short supply and the new blow has struck the markets at a very bad time. From Japan, agar-agar, camphor, menthol and peppermint oil were the chief articles reaching the London market. Two of these, camphor and menthol, are prepared synthetically in this country, but turpentine and those essential oils which are the necessary raw materials for their syntheses must be imported and British manufacturers cannot yet meet the demand.

"But much more serious than the loss of Japanese goods is the menace to the East Indies and to the shipping routes over which so many drugs travel. The Dutch East Indies produce over 90 per cent. of the world's cinchona supply; Malay gives her quota of rubber and coconut oil; Australia is our chief source of eucalyptus oil; benzoin is a product of Sumatra and Thailand; from Shanghai are shipped ephedra, menthol, rhubarb and peppermint oil. All are in danger. Current quotations for these products are varying from hour to hour and further increases seem inevitable."

Good Wishes to all our Readers for Christmas and the New Year

NOTES AND NEWS

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events

Dec. 29th.—N.V.M.A. Committee Meetings, 36, Gordon Square, W.C.1.

Dec. 30th.—N.V.M.A. Committee Meetings and Council Meeting.

* * * * *

PERSONAL

Appointment.—At a recent meeting of the Governors of the Royal Veterinary College, Mr. Albert Messervy, M.R.C.V.S., was appointed to the post of Lecturer in Surgery.

* * * * *

Will.—Mr. William Henry Dennett, M.R.C.V.S., St. Mary's, Wells Road, Fakenham, who died on October 9th, left estate of the gross value of £4,713 0s. 7d. (net personalty £3,362).

* * * * *

BENEVOLENCE

Further donation received in response to the Appeal made by the Officers of the N.V.M.A.

	£	s.	d.
Already acknowledged (*Veterinary Record*, August 16th)	1,057	13	6
Central Veterinary Society (first contribution)	25	0	0
	£1,082	13	6

* * * * *

"FARMING'S WAR-TIME EFFORT"

Addressing the Farmers' Club on the above subject on November 10th, Mr. Thomas Peacock, President of the National Farmers' Union, in the course of his remarks, said that farmers and farm workers cheerfully tackled the programme of production laid down by the Minister of Agriculture in 1939—a programme which had been carefully prepared before the outbreak of war. Immediately the word "go" was given the County War Agricultural Executive Committees set in motion the machinery which the Ministry had set up in the counties and it functioned with remarkable smoothness and efficiency. They were bound to recognise that a factor in the success of the Food Production Campaign has been the wise policy that had been pursued of selecting the land for ploughing—not from Whitehall—but in the counties with the guidence and co-operation of practical men. The practical farmer knew thoroughly well what his land was best fitted to produce; but in these critical days the determining factor is and must be the nation's needs. For example, more wheat acreage was needed—wheat was a crop which could be used both for human consumption and for the feeding of our livestock.

Maintenance of Milk Production

Probably in all our war-time farming operations the milk producer had found a greater change than any other section of the industry. Milk production had long been one of the most important branches of farming in this country, and right from the outbreak of war the nation had looked upon milk as a commodity of vital importance from the standpoint of national nutrition, particularly, of course, in the case of mothers and young children.

He had been in close touch with the Ministry of Food and our Ministry of Agriculture from the moment war broke out and he knew, therefore, just how anxious the Government were to see that the milk output was maintained. Very early on in the war he remembered they began to realise the danger of the situation created by the fact that milk producers generally were largely dependent upon feeding-stuffs imported into this country from abroad. Shipping losses meant that the space required for animal feeding-stuffs of all kinds had to be drastically cut, and before many months had passed they realised just what they were coming up against. By the beginning of last winter they knew that during the coming months supplies of imported feeding-stuffs would only be available on a small scale compared with pre-wars days, and so our dairy farming had been revolutionised perhaps more than any other type of production. The main necessity they had had to face was to reduce their dependence on imported feeding-stuffs while at the same time maintaining milk production on as near the pre-war scale as possible; and he was sure that they had gone a very long way in that direction: he could safely say probably 90 per cent. of the way.

No longer did they ring up their trading society or corn merchant and get delivered into their barns in a few hours all the perfectly balanced dairy foods they required. Instead, they had ploughed up their rich pastures and cropped the land with oats, beans, mixed corn crops, turnips, kale and cabbages, and, to an unprecedented scale, they had made high protein silage. Their remaining grassland had become more important than ever before and had had to be fed with artificial manures to make up for the smaller acreage available for grazing.

He was rather afraid that quite a number of farmers, particularly on the larger farms, had given up or were contemplating giving up, or curtailing, milk production and diverting their attention to other farming operations of a less arduous nature which did not involve such exacting working hours, particularly on Sundays. He was convinced that unless the dairy farmer could be assured that he would be fully recompensed by way of remunerative prices for his milk many more might be tempted to try other types of farming. If this should happen on any large scale, it would be nothing less than a national disaster.

It was, however, a fact that notwithstanding two years of war and a complete change over in our methods of dairy farming, our dairy herds showed a slight increase in numbers over the pre-war figure; but he thought if an analysis were made we should find that the producer-retailers of milk had increased their herds owing to the demand made upon them through the evacuation of so many thousands of people from vulnerable centres to the country districts.

If care was not taken they would find sooner or later that while there might be a reasonable supply of milk in the country and small urban areas, our cities and larger towns would experience a shortage of milk, as it was the larger farmer who sold milk wholesale to meet the requirements of our cities and towns.

Again it was important, if we were to maintain production and the fertility of our soil, that we should have as many fattening cattle as our yards could hold to make the muck for restoring to the land the fertility which must inevitably be taken out of it as the war-time ploughing policy proceeds.

He was greatly relieved to find that it had not been found necessary to reduce our herds to the extent that had been contemplated only a few months ago under the "culling" programme; and the lifting of the embargo on Irish cattle, now that Eire was free from foot-and-mouth disease, should greatly relieve the position, as there was no doubt that the

embargo had created a shortage of feeding store cattle throughout the present year. Although it was getting late in the season, he hoped that it might still be possible to get a lot of feeding cattle into our yards before the end of the year and, fortunately, there seemed to be an abundance of home-grown fodder crops waiting to be consumed.

In connection with the maintenance of soil fertility, Mr. Peacock said that the rather rapid decline in our sheep population was to be regretted as the old belief that there is nothing like the golden hoof of the sheep for maintaining the arable land in good fertility was as sound to-day as ever it was. He hoped that steps would be taken to encourage our sheep-breeders to increase their output of lambs for another season so that a plentiful supply will be available for folding and other types of feeding next winter.

Post-War Policy

Mr. Peacock next dealt *seriatim* with land drainage, the labour problem and rotation of crops. He then turned to post-war policy, saying: "Most of you will remember the assurance of 'never again' which was given to our industry after the war of 1914-18. It has taken another war on the present world-wide scale to bring all the political Parties together to give agriculture a very explicit assurance that our home agriculture will be maintained in a profitable state when peace returns. The need for so doing is dictated by three considerations:—

> Firstly—It will be tremendously important in the interests of creating employment in urban industries, when the workers return to their peace-time avocations, to maintain the purchasing power of the countryside.
>
> Secondly—The financial position of the country will be such that we shall be obliged to curtail our imports to the utmost extent possible.
>
> Thirdly—For Defence reasons it will be as important to maintain our food production as to preserve an adequate Navy, Army and Air Force.

"It would be perfectly futile at this juncture to attempt to develop the lines which post-war policy must follow in order to achieve the objective which the Government has defined. . . . But planning for the future must proceed if economic chaos is to be averted. Whilst primary producing countries overseas are piling up surpluses, the European countries which Hitler has enslaved are starving. They will have to be fed when they regain their freedom and years will elapse before they recover their productive capacity. That is a situation which can only be tackled by concerted effort on the part of all the countries which are now collaborating to destroy Hitlerism.

"I only mention that aspect of the post-war position in order to emphasise how far-reaching are the considerations which will fall to be taken into account. Having said that I want to express the view that the basis of our post-war agricultural policy must be found in the decisions taken unanimously at the Empire Producers' Conference at Sydney in 1938. The prospects that lie ahead of us only emphasise the statesmanship of these decisions. They defined the need for a policy of planned production and planned marketing. They envisaged a place in the sun for Empire producers which would make Empire agriculture a powerful force for good in building up international trade. Obviously, the Sydney plans must be broadened to meet the conditions which will exist after the war, but I am confident that they furnish the keystone of our permanent policy.

"Since the maintenance of stable, remunerative price levels will be all-important in post-war days—particularly in view of the adoption of the principle of a national minimum wage for our farm workers—I take the view that it will probably be necessary and desirable to retain some of the machinery of the Ministry of Food to purchase supplies from overseas as part and parcel of the modified 'Sydney' plans. Consideration will have to be given in that connection to the plans for handling our own domestic supplies and we must be prepared to profit from the experience which we are gaining under war-time conditions.

"It is not only in connection with the marketing of our produce that we are gaining experience; few would deny that the County War Executives are doing work of great value to the industry which ought not to be scrapped immediately the war is over. If we secure a permanent post-war policy which will ensure the prosperity of our industry, it will be our job to see that our standards of estate management and of husbandry are maintained at a high level of efficiency; and to-day in every county lessons are being learned which will not, I hope, be forgotten.

"These, I think, are some of the main features which must be embodied in our permanent policy. There are others which I have not touched upon because this paper is already too long, but I hope you will agree with me that when we claim that we can show good reason for being proud of our industry's war-time effort, we can also claim that what we have accomplished and will accomplish before these grim days are ended will provide good earnest of our ability to serve the nation's interest in the happier days to which we all look forward."

Discussion

In the course of the discussion, Lord Phillimore said that without the statesmanlike attitude of the National Farmers' Union it would undoubtedly have been difficult first to create and then to maintain the War Agricultural Executive Committees, on which, and the District Committees working with them, the whole weight of the ploughing-up campaign and the special measures taken for the increase of food production had fallen. He had been astonished at the growth of the farmers' mind, due in large measure to the long training, and long disputing, perhaps, within the National Farmers' Union precincts, but also to the wholehearted way in which farmers of late years had put science under their arms and taken it to their bosoms as a friend and helper. Working amongst farmers, he had been struck by the thorough way in which they recognise the use that could be made of science, as well as its limitations.

Fertility

It was with peculiar pleasure that he noticed the author's reference to having cattle in the yards and sheep in the folds. There was no doubt that the position to-day with regard to the maintenance of the fertility of the land was very difficult: the importance of farmyard manure to-day was really overwhelming.

The fertiliser position was distinctly difficult. It was therefore essential, as the author had pointed out, that our livestock should be increased rather than reduced.

The author had concluded his paper with a reference to the Empire Producers' Conference at Sydney in 1938. "The world is always with us," concluded Lord Phillimore, "and it is a world largely, as we have found out, in competition with us. We have felt the competition of the Dominions and we shall feel it again. We shall also feel the competition of the United States of America. I must say it gave me an unpleasant shock when I read the other day that there were three Farmers' Unions in the United States and that one of them boasted a membership of 500,000. Somehow or other, confronted again, as we shall be when the first interval after the war is over, with an over-production or a possible over-production from the land of the world, our statesmen in consultation with the bodies interested in the land will have to find a world solution. The Sydney Conference did much to point the way."

Mr. C. H. Clarke (Ipswich) said that the author had raised the question of farmers getting rid of their dairy cattle. He did not think that was so much due to price as to the extreme difficulty of getting labour. Labour, they would find, was at the bottom of the main troubles throughout the industry, in the arable counties at all events.

Dr. John Hammond (Cambridge) observed that the author had stressed the importance of animals on the farm, especially dairy cows, and he would point out the importance of the autumn and winter milk supply. He felt that the veterinary profession might be of very great help in this connection by enabling farmers to get a sufficient number of cows calving early in the autumn months. That always

had been a difficulty in this country, and he thought that veterinary surgeons were not being made sufficient use of for that purpose.

Mr. H. W. Steele-Bodger, M.R.C.V.S. (Tamworth) congratulated the author on his able paper but said that he was a little disappointed that he did not say more about the livestock side of agriculture, particularly as he knew how intensely interested Mr. Peacock was in that side of farming. He would have liked him to mention the importance of livestock not only generally, as he did, but more specifically in relation to post-war agriculture. He should also have liked to hear him say something about the schemes which his Union, in conjunction with the National Veterinary Medical Association, had in mind for the control of disease.

He could not resist the opportunity to endorse Dr. Hammond's remarks as to the facilities which they in the veterinary profession could offer to farmers with regard to the control of infertility; he thought that matter could not be over-emphasised, particularly at the present time.

"Finally," said Mr. Steele-Bodger, "I should like to suggest to the author that his Union should endeavour to have extended the facilities for culling which have recently been withdrawn. I and many of my colleagues are of the opinion that voluntary culling has done an immense amount of good in ridding the country of unprofitable livestock. We find in the course of our work that many such animals have disappeared and we are thankful that they have gone, but there are still a number remaining, and I do feel that if culling could have gone on a little longer, at the certainly not unprofitable prices which were given, it would have done much towards solving the problems of these passengers who do not pay their way. If the National Farmers' Union could help to have voluntary culling reinstated I think it would be doing a very useful work."

The Reply

Mr. Peacock, acknowledging the vote of thanks moved by Lord Phillimore and supported by the other speakers, said, in the course of his reply, that Lord Phillimore had referred to the question of science as applied to agriculture. He (the speaker) and his colleagues agreed with him that, both now and in any post-war policy, practical farming and science must go hand in hand.

With regard to the Sydney policy and the competition that they would have again, he thought that competition was inevitable, but he agreed with Lord Phillimore that the Sydney Conference pointed the way to something which would be in the interests of all of them, as primary producers, not only throughout the Empire but throughout the English-speaking nations, and for the betterment of agriculture and industry generally. He thought that was the basis on which this problem must be tackled ready for when more peaceful times come again.

With regard to the decrease in milk production, he agreed with Mr. Clarke that it was more a question of labour than anything else. As he said in his paper, many farmers up and down the country were seriously thinking of altering their farming practice, so that they would not have such exacting work as milk production involved, particularly at the week-ends. Again, it was a question of ability to pay—the ability of the milk-producing farmer to pay a sufficiently attractive wage for the long hours that are involved in milk production and attending to milking cows during the long winter periods. That again was an economic question.

Dr. Hammond had referred to the help which the veterinary profession could give them with regard to milk production. "We have been discussing this problem, and the questions to which Mr. Steele-Bodger referred, during the last few months," said Mr. Peacock, "and I hope that shortly a scheme will be launched which will be of very considerable help. We hope that it will be a great success and will be taken up both by the National Veterinary Medical Association and by the farmers. We realise the importance of the help of the Veterinary Medical Association, particularly with regard to the difficulties of obtaining sufficient autumn calves to safeguard winter milk supplies."

Mr. Steele-Bodger had expressed regret that he had not dealt more fully with the diseases of livestock. It was suggested that he should read a paper on "Farming's War-Time Effort," and he thought that Mr. Steele-Bodger would agree that diseases in farm animals might usefully form the subject of a separate paper. If it was dealt with in a paper giving a general survey of war-time farming the paper would be far too long. He felt sure it would be very interesting if they could have a paper read on this subject on some future occasion.

He agreed that the culling of cattle had done good so far as dairy cattle were concerned, but he thought that, under the present war-time conditions and bearing in mind the foot-and-mouth disease in Ireland, it was necessary to go very carefully indeed, even with dairy cattle and particularly with the system of culling other cattle. As he had said (and nothing had happened to make him change his mind), he was relieved to find that it was not necessary to cull quite so many cattle, owing to the food situation and the potential supplies of feeding stuffs, that the Government thought in the early spring of this year it might be desirable to cull.

* * * * *

In a case at Spalding County Court, the judge decided against a motorist who claimed damages for negligence against a ploughing contractor. It was alleged that plaintiff's car was charged by a bull on the road at night, and the judge held that a bull was a domestic animal and in this connection must be regarded as harmless to human beings.

CORRESPONDENCE

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

The views expressed in letters addressed to the Editor represent the personal view of the writer only and must not be taken as expressing the opinion or having received the approval of the N.V.M.A.

* * * * *

R.C.V.S. PRESIDENT'S GREETINGS TO MEMBERS

To the Editor of the Veterinary Record

Sir,—May I utilise a small space in the columns of the *Record* to send to all members of the profession, whether at home or overseas, hearty Christmas greetings and best wishes for the New Year.

Yours sincerely,
John Holroyd,
President, Royal College of Veterinary Surgeons.

Cornaa,
Wyfordby Avenue,
Blackburn.
December 13th, 1941.

* * * * *

CONTROL OF ANIMAL DISEASE: THE SCHEME OF THE SURVEY COMMITTEE OF THE N.V.M.A.

To the Editor of the Veterinary Record

Sir,—As reported in *The Veterinary Record* of the 6th inst., the Minister of Agriculture, in answer to a question regarding a scheme for control of certain animal diseases, stated that the proposed scheme was held up owing to the difficulty in connection with the choice of the most suitable contagious abortion vaccine.

We presume that the choice lies between Dr. McEwen's Vaccine 2 and the American Strain 19, and we are of the opinion that practitioners who will have to stand or fall by the decision should have some voice in the matter.

We should like to know whether American vaccine has been given a field trial in this country, as we feel that its immunising powers may not be as effective in this country as they have been in America. We also understand that its use gives rise to a positive agglutination titre, which we regard as very undesirable.

Perhaps it would assist those who have to make the choice if practitioners who have used Vaccine 2 gave their experiences.

We have used Vaccine 2 since February last. So far 140 cattle have been subjected to a second agglutination test at the end of six months, and there has not been a single abortion or even a positive titre in a vaccinated animal. The last farm to be tested showed five new positives, and all were unvaccinated animals. We have many more herds in which we are using the vaccine, but have not yet reached their second blood test.

Perhaps it is early to draw conclusions, but we view these results with great satisfaction, and we would be very loath to have to change to another vaccine without good proof of its efficacy in brucellosis *in this country*.

The acceptance of Vaccine 2 would be a fitting tribute to Dr. McEwen for his invaluable work on abortion—work that has always been backed by sound experimental proof.

With regard to the Survey Committee's scheme, we have read with amazement and not a little irritation, the many and various criticisms of the Survey Committee. We sometimes wonder what experience some of the contributors have of the Committee's recommendations. Waste talk on Bureaucracy, National Socialism and revolution gets us nowhere. There's a job to do, let's get on with it.

Although we feel that we have yet a great deal to learn, we can say that our knowledge and power of combating mastitis, contagious abortion and sterility have been very considerably increased since we have applied the Committee's recommendations. The value of the work being done is not lost on our clients, several of whom are impatiently waiting for the launching of the scheme.

The Survey Committee is doing great work and helping practitioners to realise how much more they can do to help the profession, their clients and their country.

The profession is very indebted to the members of the Committee, and to the instructors who are giving much valuable time in pregnancy diagnosis instruction. After Mr. Steele-Bodger's visit to us, we realise how little we knew before.

We would conclude by saying to all those on the Survey Committee, "Many thanks."

Yours faithfully,

T. H. Jones.
F. V. John,

Neuadd,
Llandilo,
Carmarthenshire.

. . . . .

"*And he does not need to touch wood.*"

To the Editor of the Veterinary Record

Sir,—I was called to a surgical case at a dairy farm the other day and the farmer showed me round his herd, of some 50 cows, mostly Shorthorn cross. All of them were in excellent bodily condition, and milking very well indeed. This farmer has farmed here for some six or seven years. The previous occupant of the farm had been a dairy farmer all his life and knew his job, yet he was troubled, in full measure, with all the well-known diseases that beset so many of his fellows, *viz.*, mastitis, abortion, sterility, screws, tuberculosis, milk fever and so on.

When the present farmer took over, there were at least 20 cows suffering from mastitis to a varying degree. The worst of these he sold, keeping about half a dozen, some of which cleared up—those that did not he got rid of also. After about the first year, by which time he had established the herd according to his own ideas and standards of dairy farming, these scourges of which I have spoken had ceased to trouble him, and so for five or six years this man's cows have been almost completely free of them: he challenged me to find a bad quarter amongst the whole of his 50 cows!

They are machine milked. The tuberculin test is never used. They get no medicines, but plenty of good food and care.

When I told him it was a most amazingly happy state of affairs, he replied: "It is just common sense, and also due to the fact that I never have a cow bulled until three months after calving; and I keep on telling my farmer pals that I never need to 'touch wood' either, when they say that it is sheer luck."

My friend is knowledgeable in a practical way and is an exceedingly hard worker. He is a careful feeder and says he is now getting 20 gallons of milk more per day than he was a year ago, with the same number of cows. He employs the same two cowmen the previous farmer had for years.

This man's experience has given me much thought and made me speculate as to the factors which have made for so much success in his case. Was he enjoying the benefits of a periodic damping down of those diseases which so troubled his predecessor on the farm, and was this due to the sterilising action of the last three very severe winters, or is the answer more to be found in what he himself has said, namely, common sense and giving his cows a rest for three months after calving and forgetting all about 'touching wood'?

Yours faithfully,

T. H. Michie.

41, Brighton Road,
Coulsdon,
Surrey.

* * * * *

"SALT POISONING" IN PIGS IN RELATION TO THE TREATMENT OF INTESTINAL DISEASES

To the Editor of the Veterinary Record

Sir,—I have read with great interest the article appearing in *The Veterinary Record* of November 29th by Messrs. Slavin and Worden referring to "Salt Poisoning in Pigs."

The article is particulary interesting because their experimental findings appear to have originated from an attempt to induce enteritis in pigs susceptible to paratyphoid.

For some time past, salt has been used by American veterinary surgeons in an attempt to treat paratyphoid and other intestinal diseases of pigs. To anyone particularly interested I would commend an article appearing in the October issue of *Veterinary Medicine*. [See page 749 of this issue for abstract.—*Editor.*]

Although there is not complete agreement as to the value of salt in such diseases, striking reports have appeared from time to time which suggest that such treatment is certainly worthy of trial, and in any case is not likely to be attended by such sudden deaths or aggravation of the disease as our own toxicologists have led us to suppose in the past.

One feels that if salt is so dangerous for pigs as past reports have indicated, we should be overwhelmed at the present moment by outbreaks of salt poisoning, especially in view of the large numbers of pigs throughout the country which are now fed entirely on swill.

It will be interesting to hear from anyone who has given salt treatment for paratyphoid disease a trial and in the meantime, consoled by Messrs. Slavin and Worden's findings, I am anxiously awaiting the next outbreak of paratyphoid in my own locality.

Yours faithfully,

H. C. Swann.

London Road
King's Lynn.
December 2nd, 1941.